

2016

# UNCLE SAM BIKEWAY IMPROVEMENT ACTION PLAN



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# EXISTING CONDITIONS



## OVERVIEW

The Uncle Sam Bikeway Improvement Action Plan Project has been established to assess the needs and opportunities for improving the bikeway and provide recommendations for increasing its use, its brand, and its comfort for all users. This will include the create of a trail concept; increasing trailheads, awareness, and access to the trail, as well as an assessment through the Crime Prevention Through Environmental Design to increase comfort, use, and safety. Concepts for wayfinding signage will also be produced.

## TRAIL HISTORY

The Uncle Sam trail installation was a part of the national trend known as Rails to Trails Conversions. Rails to trails is a process where abandoned rail lines are converted to shared use paths. The Uncle Sam Bikeway has been established along 3.5 miles of the Troy and Boston Railroad line, which was established in 1852. The tracks were dismantled in 1973 and the bikeway was opened in 1981. Now it serves the residents of Troy and regional trail users



Troy's Union Station Circa 1900  
Source: E. Hungerford Wikicommons

## TRAIL CORRIDOR

### TRAIL ALIGNMENT

The Uncle Sam Bikeway primarily follows the abandoned rail corridor of the Troy and Boston Railroad line. The trail runs from north to south, starting at Northern Drive and terminating at Middleburgh Street. The trail runs primarily between Oakwood Cemetery to the east and the Lansingburgh neighborhood to the west.

Beyond Middleburgh Street, the trail continues with on-street facilities, including a marked state bike route and bike lanes, bringing users to the heart of the downtown area. However, for the sake of this action plan, the section of the Uncle Sam Bikeway from Middleburgh Street to Northern Drive will be the only part of the trail that is considered at this moment for improvements.

### TRAILHEADS

The Uncle Sam Bikeway has three primary trailheads. They meet the street network at:

- Northern Drive
- Gurley Avenue
- Middleburgh Street

The three trailheads provide some form of parking (Northern Drive and Gurley Avenue both have off-street parking facilities while Middleburgh Street has on-street parking) and minimal signage.



Northern Drive Trailhead & Parking



Middleburgh Street Trailhead

## CROSS-STREETS

In addition to the streets at the locations of the three trailheads, the Uncle Sam Bikeway crosses or meets the following streets:

- Ingalls Avenue
- Glen Avenue
- Garden Court
- Cemetery Road

At each of these crossings, there are no signs or markings to indicate to the bikeway users what cross-street they have met or how far it will be before the next crossing. There are also no crossing facilities, such as crosswalks, at these locations.



Glen Ave Connection

Additionally, the Uncle Sam Bikeway's corridor comes very close to, but does not connect with the following streets:

- Ives Court
- 126th Street
- 125th Street/9th Avenue
- 123rd Street
- 122nd Street
- 111th Street
- 110th Street
- 103rd Street/10th Avenue
- Grace Court
- Douw Street
- Oakwood Cemetery Driveway

While this is a relatively large list of missing connections, it should be noted that the absence of a connection does not necessarily represent a failure of the trail facility, as too many trail connections can become a hindrance to the service of the trail. Identifying the possibility and feasibility of each missed connection will be assessed later in the project.



## TRAIL CONNECTIONS

### NEIGHBORHOODS

The City of Troy has 9 separate and designated neighborhoods. They include Lansingburgh (the largest of the neighborhoods), North Central, Frear Park, Downtown, The Hill, Sycaway, South Central, South Troy, and Eastside. Among these neighborhoods, the Uncle Sam Bikeway passes through Lansingburgh, North Central, and Downtown. It also provides connections to The Hill and Frear Park.

### SCHOOLS

The Uncle Sam Bikeway abuts the grounds of 4 separate school facilities, including Lansingburgh High School, Knickerbacker Middle School, Rensselaer Park Elementary School, and Catholic

Central High School. The trail runs parallel to the grounds for each of these schools, but no connection is made. A fence also prevents trail users from access the grounds of Lansingburgh High School, Knickerbacker Middle School, and Rensselaer Park Elementary School.

The trail also leads users from Lansingburgh down a majority of the way to both Rensselaer Polytechnic Institute and Russel Sage College. While the trail does not make a direct connection, users can follow neighborhood streets from the Middleburgh trail head to arrive at RPI or follow the on-street portion of the trail and then downtown streets to Russel Sage.



View of Lansingburgh High School from the Bikeway



## PARKS & OPEN SPACE

The Uncle Sam Bikeway passes by several major parks and open spaces. Three of the largest parks in Troy, which all have potential for connecting to the Uncle Sam Bikeway, are Frear Park, Knickerbacker Park, and Riverfront Park. The amenities that each of these parks offer are listed below:

### Frear Park

- Playground
- Hiking/Nature Trails
- Ice Rink
- Picnic Areas
- Decorative Gazebo & Fountain
- Golf Course
- Restaurant ~ The Park Pub  
(Privately Operated)
- Parking



Vietnam Memorial ~ Waterfront Park

### Knickerbacker Park

- Playground
- Sports Fields
- Historic Monuments
- Ice Rink
- Oval Track
- Public Pool
- Parking

### Waterfront Park

- Amphitheater
- Waterfront Access
- Shared Use Path
- Historic Monuments
- Splash Pad/Play Fountain
- Picnic Areas
- Seasonal Festivals & Events
- Parking

There are also a number of additional parks, such as the 9/11 Memorial Park in Lansingburgh, that trail users could connect to through local streets. A full list of City operated parks can be found at:

[www.troyny.gov/Departments/Parks\\_Recreation/Home.aspx](http://www.troyny.gov/Departments/Parks_Recreation/Home.aspx)

## KEY DESTINATIONS

Several key destinations in Troy also make connections with the Uncle Sam Bikeway. They include commercial areas, landmarks, and other attractions.

### Commercial Zones

The Uncle Sam Bikeway connects with a number of different commercial areas. The most notable is the downtown core of the City of Troy. Following the on-street section of the bikeway, trail users will find themselves in the heart of the downtown neighborhood, full of local boutiques, cafes, restaurants, and retail centers.

On the other side of the trail, just downhill of the Northern Drive, there are a number of commercial plazas, including:

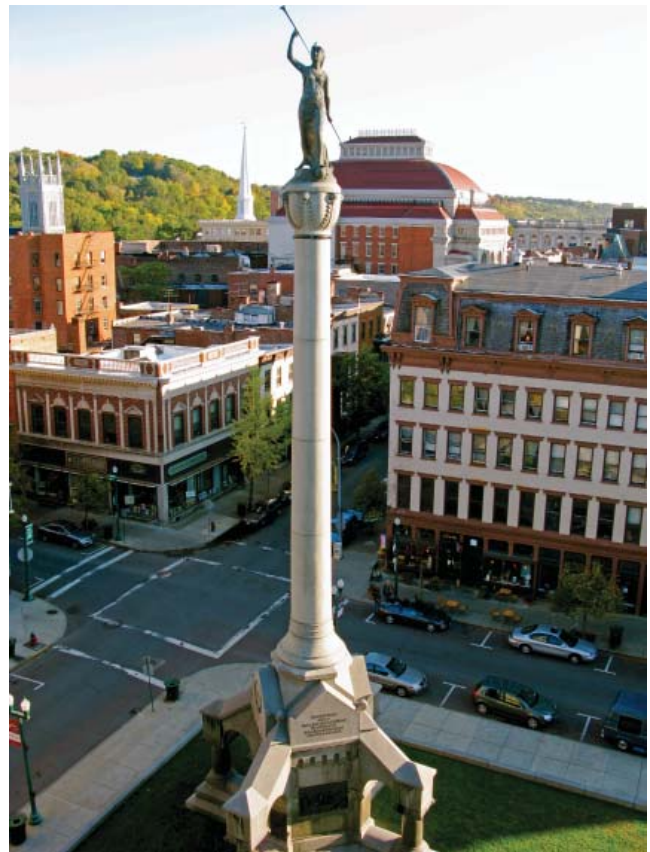
- Dollar General Plaza
- Riverside Plaza
- Price Chopper Plaza
- Hannaford Plaza

Connections to these commercial centers provides trail users access to shopping and dining destinations, increasing trail use.

## Landmarks & Attractions

The most notable landmark that connects to the Uncle Sam Bikeway is Oakwood Cemetery. The cemetery is a large space with low-volume roads running through it and plenty of tree coverage. This makes it a popular bicycling location for daytime riding. The cemetery also has a deep historic value to the City of Troy. Many influential residents of the City are buried there, including 'Uncle' Sam Wilson, who's namesake brands the trail itself.

The on-street section of the Uncle Sam Bikeway also brings trail users to close proximity to each of Troy's three 'public squares' and the historic Troy Savings Bank Music Hall



Monument Square Downtown  
Source: Daniel Case Wikicommons

## REGIONAL BIKEWAY NETWORKS

In addition to connecting neighborhoods and destinations, the Uncle Sam Bikeway also makes connections to several regional networks.

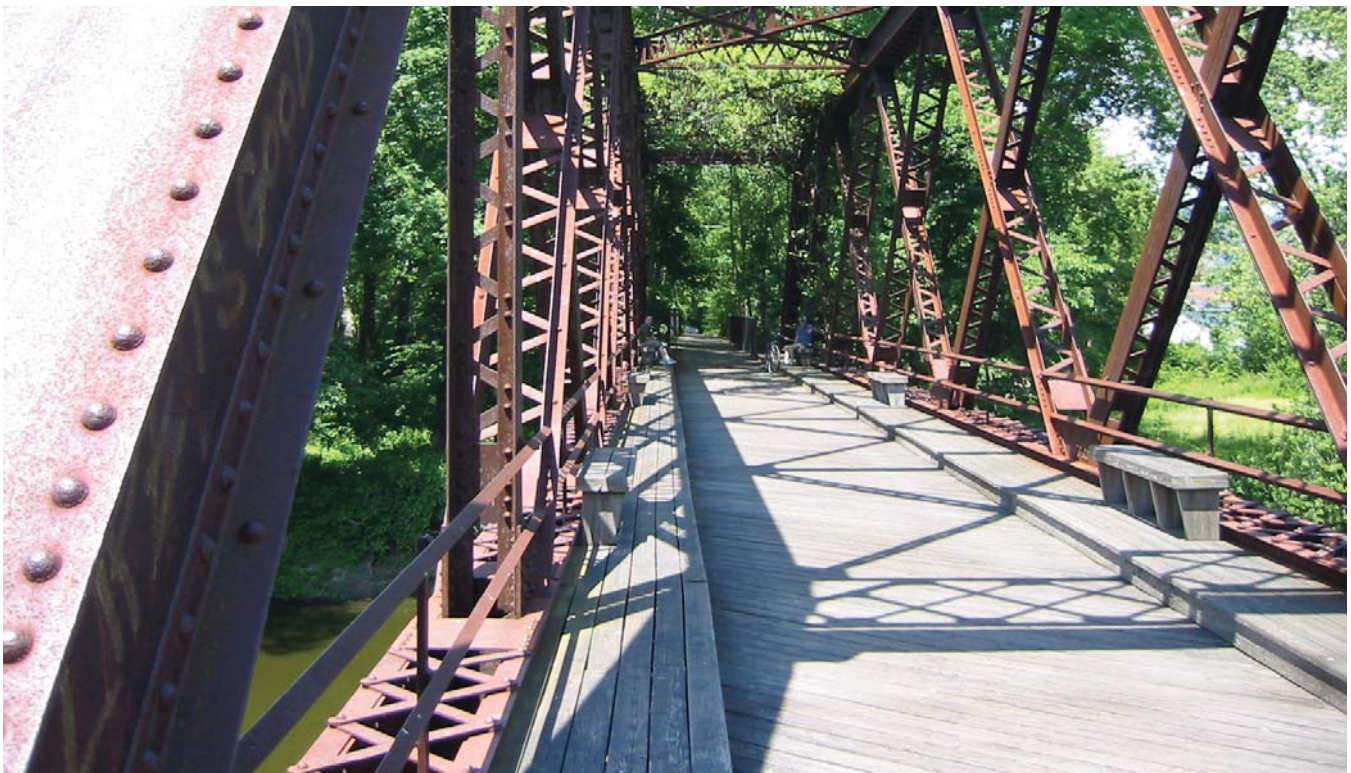
### State Bike Route 9

State Bike Route 9, established by the New York State Department of Transportation, is 345 miles in length, connecting New York City to Rouses Point along the Canadian Border. It is largely an on-street bike route. The route passes through the City of Troy, running parallel to the Uncle Sam Bikeway and following River Street/Second Avenue.

### Mohawk Hudson Bike-Hike Trail

The Mohawk Hudson Bike-Hike Trail connects the City of Albany to the Town of Rotterdam. Its corridor passes through the City of Cohoes and the City of Schenectady. While it does not make a direct connection to the City of Troy or the Uncle Sam Bikeway, a connection can be made following city streets and traversing the Hudson River.

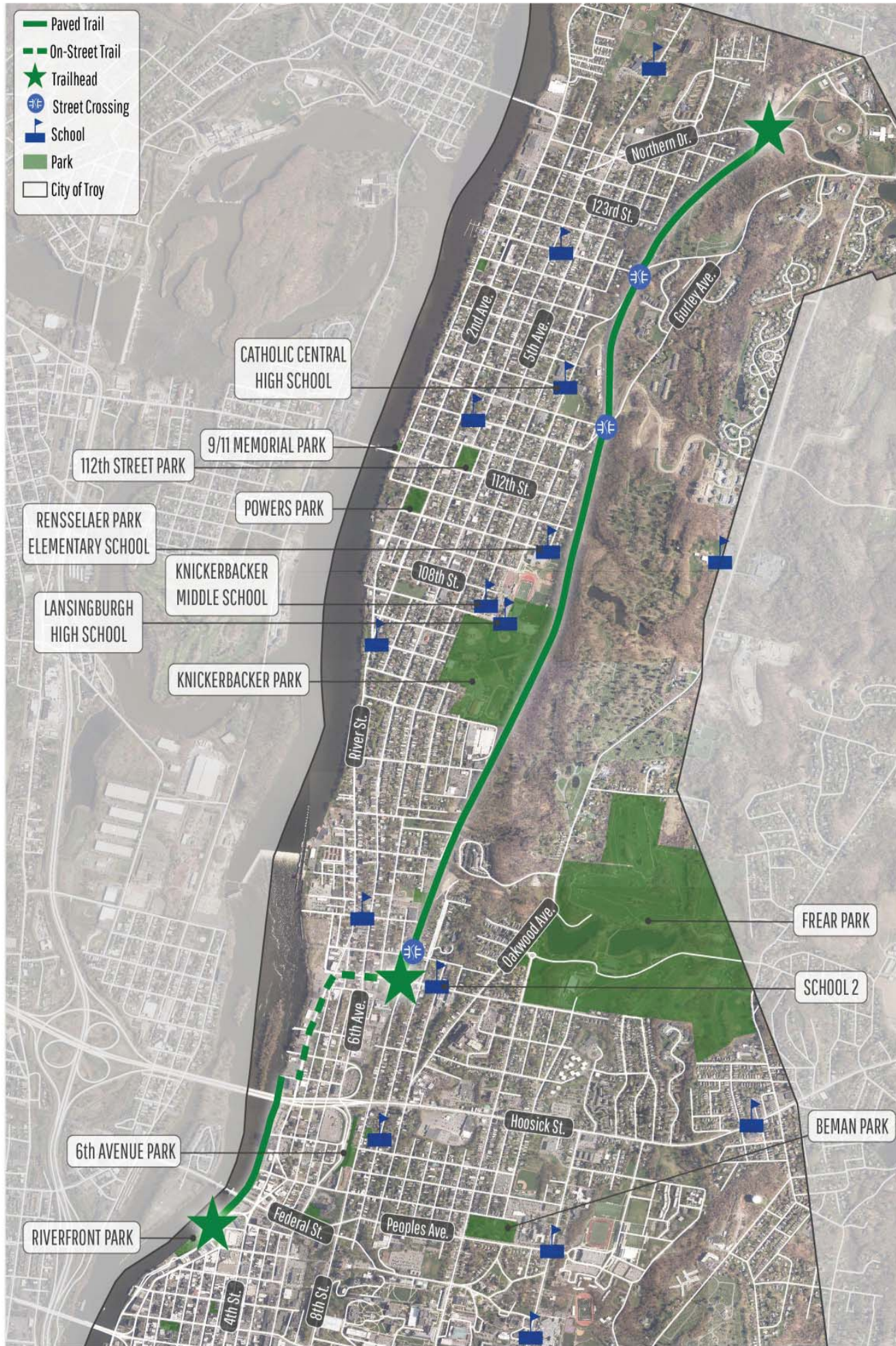
This trail is part of the regional Erie Canalway Trail Network, which connects the City of Schenectady to Buffalo.



Wall Kill Valley Rail Trail ~ Connected to the Uncle Sam Bikeway through the Hudson River Valley Greenway

Source: Daniel Case Wikicommons









# ANALYSIS

## CPTED ANALYSIS

### IMPROVING QUALITY OF LIFE

Crime Prevention Through Environmental Design (CPTED) is a proactive crime fighting technique in which the proper design and effective use of the built environment can lead to a reduction in the fear of and incidents of crime and an improvement in quality of life. In contrast to the approach of addressing crime concerns by implementing visually affronting security or target hardening measures such as locks, hard barriers, security gates, security patrols, etc., CPTED promotes high quality and visually pleasing solutions as first responses that aim to enhance the legitimate use of space. CPTED can be applied without interfering with the normal

use of the space. It is easy to apply and can be economical to implement, especially if it is done early at the planning and design stages of a project. It is very important to realize CPTED principals only reduce the opportunity for crime; crime prevention and social programs should be implemented to tackle the underlying cause of crime in communities. These steps work in conjunction to create a safe environment to work, live, or play.

The Principles of CPTED are:

- Natural Surveillance
- Natural Access Control
- Territorial Reinforcement
- Maintenance



## Natural Surveillance

Increasing visibility by occupants and casual observers increases the detection of trespassers or misconduct at a facility. For instance, if a high wooden fence blocks the view of a loading dock, the lack of visibility may invite thieves. Conversely, the use of permeable fencing that allows an unobstructed view of the area by workers or passers-by may discourage thieves. Windows, door viewers, mirrors, and other design feature that improve visibility fall under natural surveillance.

## Natural Access Control

The idea is to employ both real and symbolic barriers—including doors, fences, and shrubbery—to define and limit access to a building or other space. For example, to deter burglars from entering lower-story windows, one could plant dense, thorny bushes near the windows or install window locking devices or an alarm system.

## Natural Territorial Reinforcement

This is the process of establishing a sense of ownership, responsibility, and accountability in property owners, managers, or occupants to increase vigilance in identifying trespassers. For example, the use of low edging landscape along sidewalks in an apartment complex marks the territory of individual apartments and discourages trespassers from cutting through. Also, people pay more attention to and defend a particular space if they feel psychological ownership of it. Territorial reinforcement measures, which may be physical or symbolic, tell people they are in a defined space. Color,

texture, surface variations, signage, and way finding systems are all part of territoriality and boundary setting. Thus, it is possible, through real barriers (fences and walls) and symbolic markers (warning signage, low hedges, low picket fences) to encourage tenants or employees to defend the property from individuals with undesirable intentions. Such reinforcement is termed natural because it results from normal, routine use of the environment.

## Maintenance

The basic upkeep, repair, and maintenance of property. Neglected property can create mistreatment, while maintained property will elicit proper treatment. This strategy directly impacts the fear of crime in a community due to residents' perceptions of responsibility and caring in the neighborhood. Examples include the immediate removal of graffiti, landscape maintenance, weed abatement, and painting worn buildings. For the Uncle Sam Bikeway, this principle will go into effect once the corridor is improved and the facility constructed.

CPTED works by influencing the behavior of criminals prior to crimes being committed by tipping the scales of risk vs reward. If proper design is implemented, then the criminal's perceived risk of being caught by a capable guardian (any legitimate user of the area or law enforcement) will outweigh the value of the reward. At that moment, crime can be displaced to another area, and statistics have shown that when crime is displaced, its seriousness will be reduced or the crime will not happen at all.

## CPTED SURVEY

The trail corridor was surveyed for this report on Friday, September 20th, 2016 from approximately 12:00 to 2:00 PM.

The trail's proximity to a variety of land uses including residential neighborhoods, commercial areas, and schools provides a promising user base. At the start of the survey, local users, including parents with children, were observed on the Uncle Sam Bikeway near the southern

trailhead at Middleburgh Street. Heading north along the trail corridor from Middleburgh Street, users quickly come upon the Martin Luther King apartment complex, run by the Troy Housing Authority, up a hill to the east. Further north along the trail, there are residential houses facing the trail. This provides a sense of security for trail users as there are people around to witness activity along this portion of the trail corridor.





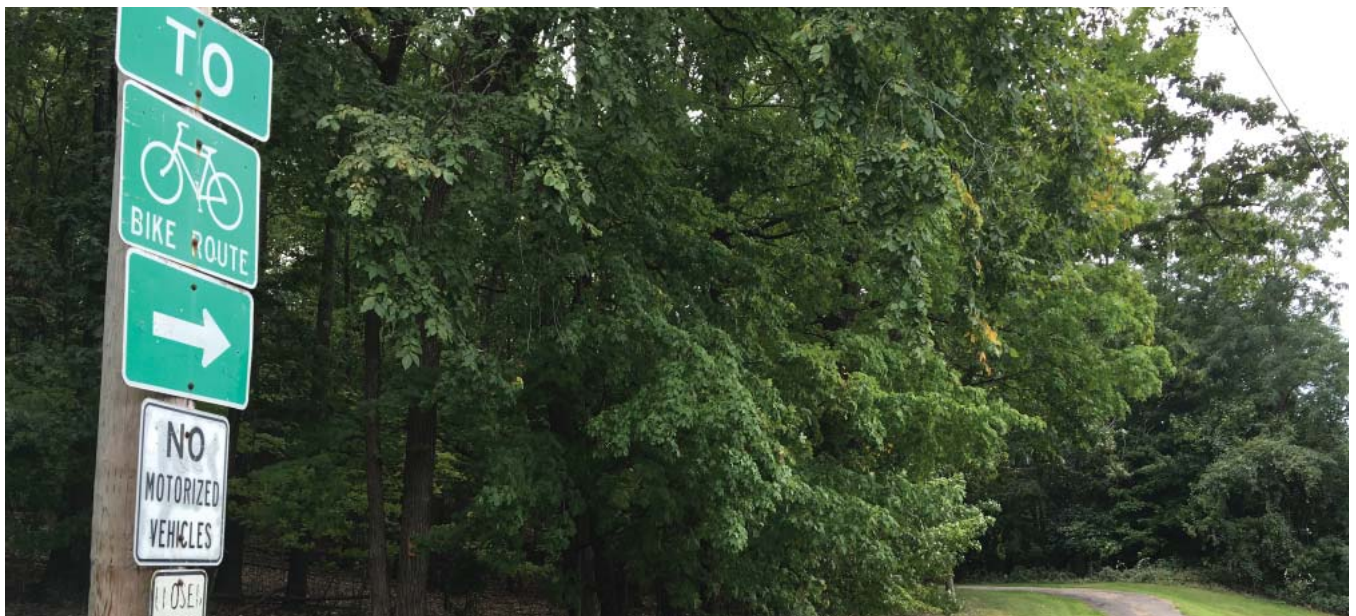
There are four schools adjacent to the Uncle Sam Bikeway corridor: Lansingburgh High School, Knickerbacker Middle School, Rensselaer Park Elementary School, and Catholic Central High School. Students, as well as their families and teachers, could greatly benefit from improvements along the corridor. The school's presence near the trail indicates a demand for walking and biking in the area. The Uncle Sam

Bikeway, however, has limited amenities in the area and no direct access points leading to the schools. The schools are all located on the western side, and often downhill of the corridor, and do not have any formal connections to the Uncle Sam Bikeway. In fact, there is a fence between many of the schools and the trail corridor, further enhancing the disconnect between the two compatible land uses.



The historical monuments located on the trail provide a sense of community for trail users. While this is a positive aspect of the trail, there are no amenities, such as benches, wayfinding signage, or a sign explaining the historical significance of the monuments. This is a common theme along the trail corridor. There are no amenities, such as

benches or trash receptacles, and no wayfinding signage, such as signs indicating the direction and distance of various destinations or any sign even stating the user is on the Uncle Sam Bikeway. The only sign indicating a bike route existed was present at the northern trailhead on Northern Drive stating there was a “Bike Route.”







While there are many land uses in the surrounding area, very few of them are directly adjacent to the trail. The majority of the corridor remains in wooded areas, out of sight of development or human activity. This can create a feeling of isolation and a lack of security for pedestrians and bicyclists on the Uncle Sam Bikeway, deterring people from using the trail corridor.

There is a short tunnel just north of the Martin Luther King apartment complex. There is no light source inside the tunnel which could be an obstacle for some users as it decreases visibility and perceived safety. The graffiti on the tunnel walls shows a lack of respect for public space, potentially making the corridor unattractive to some users. Additionally, it appears adjacent businesses near the tunnel use the trail for storage of industrial equipment and materials.





The condition of the Uncle Sam Bikeway varies along the corridor. While most of the trail is in good condition, there are spots in need of maintenance and repair. There are some sections which could benefit from resurfacing,

making users feel safer biking and walking on the pavement. Other sections are overgrown, decreasing visibility. Improved and more frequent maintenance of the trail will improve the user experience on the Uncle Sam Bikeway.





The frequency and condition of the current road crossings pose some problems along the corridor. There are long stretches along the trail without any access points, trailheads, or road crossings. If a user were to have a problem, they may need to travel farther than they would like in order reach a developed area to get help. When the trail does intersect with a road, there is often little to no indication trail users may be crossing. Many intersections have no street crossing treatments, such as crosswalks or signage, making them unsafe for pedestrians and bicyclists on the trail. There is a crosswalk at the southern trailhead at Middleburgh Street, but there is no signage alerting drivers to watch for people in the crosswalk. Crossing improvements would greatly enhance a trail user's experience on the Uncle Sam Bikeway.



## DESIGN RECOMMENDATIONS

The following are specific design recommendations for safety and security to be used for the Uncle Sam Bikeway.

### Considerations:

Call boxes, lockable gates, and other target hardening strategies may be used to increase the perception of security, but are not necessary if CPTED principles are being used to design the trail. Target hardening is not a CPTED principle, and should only be considered if there is a considerable public concern or known criminal activity.

1. Lighting is recommended for all access points and proper intervals along the trail with emphasis on roadway connections. Lighting the corridor after dark encourages 24-hour use and requires increased patrolling. The City should consider park hours from dawn to dusk and patrol during the first six months of operation. Lighting will meet Illumination Engineering Society (IES) minimum standards for lighting which is 3 ft. candles at a 4:1 average to minimum ratio. Parking

area and roadway access lighting will be metal halide pole mounted with full cutoff fixtures and a type V light distribution pattern. They will be designed to limit glare and light trespass. All trail corridor lighting will be illuminated to 1 ft. candles at a 4:1 average to minimum ratio and designed at pedestrian scale. All lighting shall be LED or other white light source. Lighting will be designed to limit light trespass and glare. Trees and lighting in combination are not recommended.

2. All proposed landscaping should follow the "two foot six foot" rule. All shrubs and groundcover should not exceed two feet in height, and lower tree canopies should be trimmed to six feet. This increases natural surveillance and eliminates hiding areas along the corridor. Tree canopies should not interfere with or block the lighting along access points or parking areas. This creates shadows and areas of concealment. Vegetation will follow a routine maintenance plan to maintain the two foot six foot rule.



3. Window views along buildings adjacent to the trail corridor should be maximized to overlook the future trail and maintain and encourage natural surveillance. Overgrown vegetation blocking window views should be pruned. All invasive plant species and dead trees should be flagged and removed by a qualified arborist prior to demolition. During demolition remove saplings at Sta. 27+00 to 29+00 to discourage new growth. In areas that are densely wooded, selective clearing of the understory at Sta. 32+50 to 34+00 is recommended to provide increased natural surveillance.
4. Recommended public access points should be well maintained. Consider the use of pavers or different textures and colors at formal entrances to indicate a transition from public space to semi private space. Access points should have clear site lines, signage, or monuments indicating public use. See Recommendations #5 and 6.
5. Install trail monuments/gateway feature at all access points: Middleburgh Street; Glenn Avenue; 101st Street; Gurley Avenue; Cemetery Road; and Northern Drive.
6. Install wayfinding signage on adjacent roadways and key destinations along the trail corridor, such as Knickerbacker Park. Wayfinding signage and trail branding signifies park space and provides clear territorial reinforcement. Wayfinding signage for the trail also helps with location services for local enforcement.
7. Where existing vandalism exists, such as the tunnel graffiti, and along the rear walls of buildings, public art should be showcased in the form of murals. Murals are an excellent way to engage the local community and tell a story about local history or culture. A local artist should be commissioned for a mural for the wall at the south end of the parking area and where other areas of graffiti along the corridor have become problematic.

## OPERATIONAL RECOMMENDATIONS

### Safety and Security Program

In order to provide reasonable and ordinary safety measures, the City of Troy should develop and implement a Safety and Security Program for trails, if not already in place. This program should consist of well-defined safety and security policies; the identification of trail management, law enforcement, emergency, and fire protection policies; and a system that offers timely responses to the public for issues or problems related to safety and security. The local agency will need to implement internal coordination for safety and security between Parks and Recreation, Police, Fire, Public Works, and Administration Departments. Additionally, procedures and policies should be established for external coordination among the local agency, local alliances, local neighborhood watch associations, and “Adopt-a-Trail” organizations. Important components of the Safety and Security Program should include:

- Establishment of a safety committee or coordinator
- Preparation of a trail safety manual for employees and agencies
- Establishment of user rules and regulations
- Development of trails emergency procedures
- Preparation of a safety checklist for the trail
- Preparation of a trail user response form

- A system for accident reporting and analysis
- A regular maintenance and inspection program
- Site and facility development and review
- A public information program
- Employee training program for safety and emergency response
- Ongoing research and evaluation of program objectives

### Maintenance

The most important responsibility of a well-developed greenway and trails maintenance program is to provide safe, clean and smooth travel surfaces. The maintenance program should also address system wide issues of liability, vandalism, litter, and upkeep tailored to the Uncle Sam Bikeway character. The continued success of the trail will hinge on this key element, since keeping trails clean and safe is vital to promoting their continuing use, which in turn helps to deter criminal activity.



## Trail Rules and Regulations

The most effective trail use management plan is a well-conceived safety program that provides the individual user with a Code of Conduct for the trail, sometimes called a Trail Ordinance. Several multi-use trail systems across the United States have adopted progressive ordinances for public use. It is recommended that the following Rules and Regulations be implemented for the Uncle Sam Bikeway. These rules should be displayed in both brochures and on information signs throughout the trail.

The following is a list of suggested user guidelines taken from other successful greenways and trail systems. These rules can be posted at trailheads and on trails maps.

- Trail traffic keeps to right, except to pass.
- Traffic to travel at a reasonable speed in a consistent and predictable manner.
- Look to front and rear when changing lane position.
- Obey traffic lights and stop signs and yield when entering onto the trail.

- Users in groups should allow ample room for others to pass on the trail.
- Users to give warning signal before passing.
- Users should have reflectors and lights from dusk until dawn.
- Pets should be kept on shortened leash while on trail and cleaned up after.
- No intoxicated users on the trail, no open containers on or in close proximity to trail.

## Outreach, Education, and Collaboration

Prior to groundbreaking, the City should meet regularly with law enforcement, life, and fire officials to ensure safe project operations. Include a multidisciplinary review of safety and security design and operations practices prior to final trail design and construction. Once the trail is open for public use, review procedures, staffing levels, and safety and security measures with the managing agency during on-going operations. This allows the managing agency to identify and respond to localized security concerns that may occur over time.

## OPPORTUNITIES & CONSTRAINTS

As part of the effort to gain public input on the trail's perceived reputation and the improvement program, a public meeting was held. The public meeting included an overview on the history of the trail, and explanation of the project, and an opportunity for members of the public to identify opportunities and challenges for developing the trail. The public was invited to mark up printed maps at the meeting, in order to give location based input. These comments are summarized on the following page.

Among the comments, the most prominent and most commonly repeated were as follows:

- Introduce lighting to the trail, but avoid lighting the residential properties that abut the trail corridor.
- The northern most 1/2 mile of the corridor is secluded and uninviting.
- Signage and vehicle restriction improvements should be the highest priority in the short term.
- A connection to the Lansingburgh School District Complex (Lansingburgh High School, Knickerbacker Middle School, and Rensselaer Park Elementary School) should have a connection to the trail.

Many of the comments regarding comfort, safety, and visibility aligned with the observations made by the consulting team during the CPTED assessment. These included the seclusion of the northern most section of the trail, the overgrowth of the trail just beyond Ingalls Ave, and poor visibility at the trail heads.

These comments provided by the public have been considered and properly weighed into the process of developing the plan recommendations.





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# TRAIL CONCEPT & RECOMMENDATIONS

## OVERVIEW

Based on public input, the assessment of existing conditions, and goals set forth for this project, the recommendations for the Uncle Sam Bikeway can be broken down into the following categories:

- Trailhead Recommendations
- Access Point Recommendations
- Comfort & Safety Recommendations
- Wayfinding Recommendations
- Program Recommendations
- Long Term Development

Specific improvements that fall under each of the following categories can be found within this chapter of the action plan. Along with specific recommendations, a priority development schedule has been developed with planning level cost estimates (see page 53).

## TRAILHEAD RECOMMENDATIONS

There are three trailheads being considered for this action plan for improvement. While there are additional access points along the trail, the access points noted as trailheads shall receive special consideration, as they are the primary locations for accessing the bikeway. The three trailheads are as follow:

- Northern Drive Trailhead
- Gurley Ave Trailhead
- Middleburgh Street Trailhead

Each trailheads' recommendations focus on the following goals:

- Restricting motor vehicle access
- Improving trail identity & visibility
- Increase trail comfort
- Increase trail amenities

In addition to the outlined recommendations on the following pages, each trailhead should be outfitted with bike parking, landscaping, and benches.

## NORTHERN DRIVE TRAILHEAD

### RECOMMENDATIONS

The northernmost trailhead exists at the end of the trail, where it meets Northern Drive and Oil mill Road. Currently, the trailhead has a single set of signage that indicates that includes the Manual on Uniform Traffic Control Device's (MUTCD's) D11-1, W16-9P, W16-5P, and R5-3. However, there is no branding signage that indicates that this is a trailhead for the Uncle Sam Bikeway, or that it is part of any trail network. The trail opening at this trailhead is also approximately 40 feet wide, resembling more of a street corridor, and parking is permitted at the opening but there are no striped stalls or obvious parking areas, which can lead motorists to accidentally drive further onto the trail looking for parking.

#### Short Term Recommendations

The short term recommendations primarily revolve around branding and increasing visibility of the trailhead. Access from northern Lansingburgh along Northern Drive is also recommended in short term development.

At the trailhead, it is recommended that a gateway treatment, such as the one seen to the left, clearly indicating the Uncle Sam Bikeway name, should be installed at the point where the parking section ends and the trail facility begins. This will clearly mark the barrier and deter motorists from entering the trail. Wayfinding signage, specifically an information kiosk on the

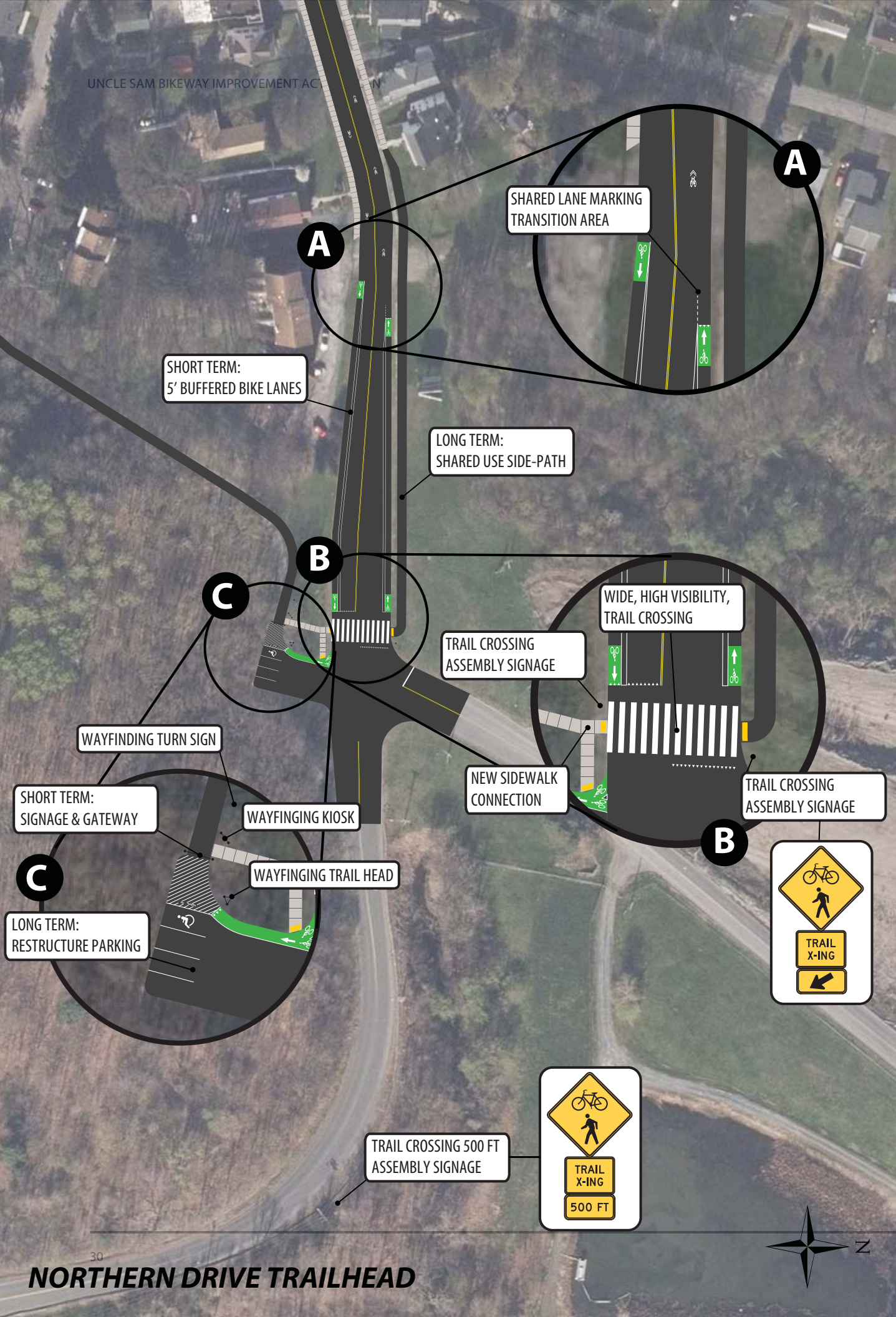
history of the Uncle Sam Trail and Lansingburgh, a directional sign pointing users along the trail and down into the City, a trailhead sign denoting the access point as a trailhead, and a mile marker marked zero, should all be installed around this gateway treatment.

For access to the trailhead from the Lansingburgh neighborhood, buffered bike lanes should be installed starting at the trailhead and heading east for approximately 400 feet. The buffered bike lanes shall be 5' wide bike lanes (or wider), with 2' striped buffers. Beyond the 400 feet, the roadway narrows, vehicle speeds decrease, and it is recommended that the buffered bike lanes transition to shared lanes until the end of Northern Drive.

#### Long Term Recommendations

Long term recommendations include restructuring the parking lot and installing a shared use side-path along the north side of Northern Drive. The parking restructuring should include striped stalls, a bicycle lane through the parking area, handicap parking, and striped hatching of the area before the trail entrance. It will also likely require repaving the parking area. The shared use path installation would include an 8' sidepath with a 5' buffer, a high visibility trail crossing with proper signage, and a sidewalk connection.







## GURLEY AVE TRAILHEAD RECOMMENDATIONS

Approximately a mile south of the Northern Drive Trailhead, a mid-trail trailhead exists where the Uncle Sam Bikeway meets Gurley Ave. This trailhead has a clearly denoted, paved, but not striped, parking area. However, it does not have any signage or branding denoting the presence or purpose of the trail. The parking is on the northern side of Gurley Ave, but the trail does not have any crossing facilities for getting from one side of Gurley Ave. to the other. Large boulders currently rest on both sides of the trail where it meets the parking area. This acts as a make-shift gateway treatment, noting to trail users and motorists alike where the shared parking area ends and the exclusive non-motorized facility begins.

### Short Term Recommendations

Short term recommendations for the Gurley Ave Trailhead include signing and striping efforts. The priority short term improvement is to install wayfinding signage. This should include an information kiosk near the parking area, a trailhead sign on the northern side of Gurley Ave, a directional sign on the southern side of Gurley Ave, and appropriate mile markers. The parking area should be striped as well, and a high visibility trail crossing with proper signage should be installed.



### Long Term Recommendations

Long term recommendations involve increasing pedestrian and bicycle access to the trailhead. It is proposed that a sidewalk is installed along the north side of Gurley Ave. Additionally, a 5' bicycle climbing lane with a 2' buffer is recommended on the south side of Gurley Ave from 8th Ave to the trailhead. On the south side of Gurley Ave, shared lane markings should be installed.

Long term recommendations also include the installation of trail amenities, such as benches, bike parking, and public art.



## MIDDLEBURGH STREET TRAILHEAD

### RECOMMENDATIONS

On the southern end of the rail-trail section of the Uncle Sam Bikeway, where it transitions to the on-street trail facilities, is the third and final trailhead that will be assessed for this action plan. The trailhead has a curbcut that allows bicyclists and emergency vehicles to access the bikeway, but there is no signage, markings or detectable warning panels to denote the facility as a shared use path.

#### Short Term Recommendations

Short term recommendations for the Middleburgh trailhead include the addition of an information kiosk on the western side of the trail, and trailhead wayfinding and turn signage on the east side. Amenities, such as benches, bike parking, and trash receptacles should also be installed.

Additionally, ADA compliant pedestrian warning panels should be installed on the curb cut. This will serve two primary purposes:

- The pedestrian warning panels will denote the transition from street space to a pedestrian facility for the visually impaired. The color of the panels contrast with the adjacent pavement, indicating the transition to those with limited vision, and the truncated domes can be detected with walking canes used by the physically blind.

- The panels also serve as a vehicle deterrent. Without the panels, the curbcut resembles a driveway curb cut, indicating that the facility may be used by motor vehicles. With the panels, the curbcut is recognizable as a pedestrian facility.

#### Long Term Recommendations

Long term recommendations include the addition of lighting. This particular trailhead can be the easiest to miss during twilight hours. Including lighting fixtures can help potential trail users find the facility, as well as deter illegal activities.

It is also recommended that in the long term, a parking facility is added to this trailhead. Currently, the Middleburgh Trailhead is the only trailhead that does not have designated trail parking. There is on-street parking around the vicinity of the trailhead, but including a trail parking facility will make the trailhead much more inviting.

Creating a direct connection from the trail to the playground at the intersection of Ingells Ave and 7th Ave should be a part of the long term strategy, as well. This will increase visibility of the trail and create an additional highly desirable connection for the trail.





Pedestrian scale  
lighting at trailhead  
entrance.

Wayfinding signage  
installed at the trailhead  
and along the pathway

Public Amenities:  
Benches, Trash Bins,  
Bicycle Parking

Pedestrian Warning  
Panel installed on curb  
cut at

## ACCESS POINT RECOMMENDATIONS

Throughout the trail corridor, there are a number of formal and informal access points that can be further developed or formally established in order to encourage higher trail usage. The following access point recommendations have been developed in order to create such an effect on the Uncle Sam Bikeway. As time progresses, more access points can be formalized.

### IVES COURT

Ives Court terminates immediately before it reaches the bikeway corridor. A grass area, and overgrown grade change separate the street from the trail. This location already serves as an informal access point and formalizing it would be a low-cost way to create a more comfortable access point for those who may not feel safe on Northern Drive.

### CEMETERY ROAD

Cemetery Road is an existing, formal connection to the Uncle Sam Bikeway, but lacks proper signage, markings, and brandings. The addition of a trail crossing with proper signage would greatly increase the comfort of this crossing and placing wayfinding directional signs will let users know where they are and help potential users identify the trail.

### KNICKERBACKER PARK

Though the bikeway runs along the park's property edge, and does make a formal connection to it at the location locally named "Monument Hill," the connection only consists of approximately 100' of paved asphalt that leads into the park. Continuing this pavement down the hill and connecting it to the paths within the park will open up access to the park, its many amenities, and the neighboring schools. The park and trail also currently have the same operating hours, so no conflict exists with connecting the two.

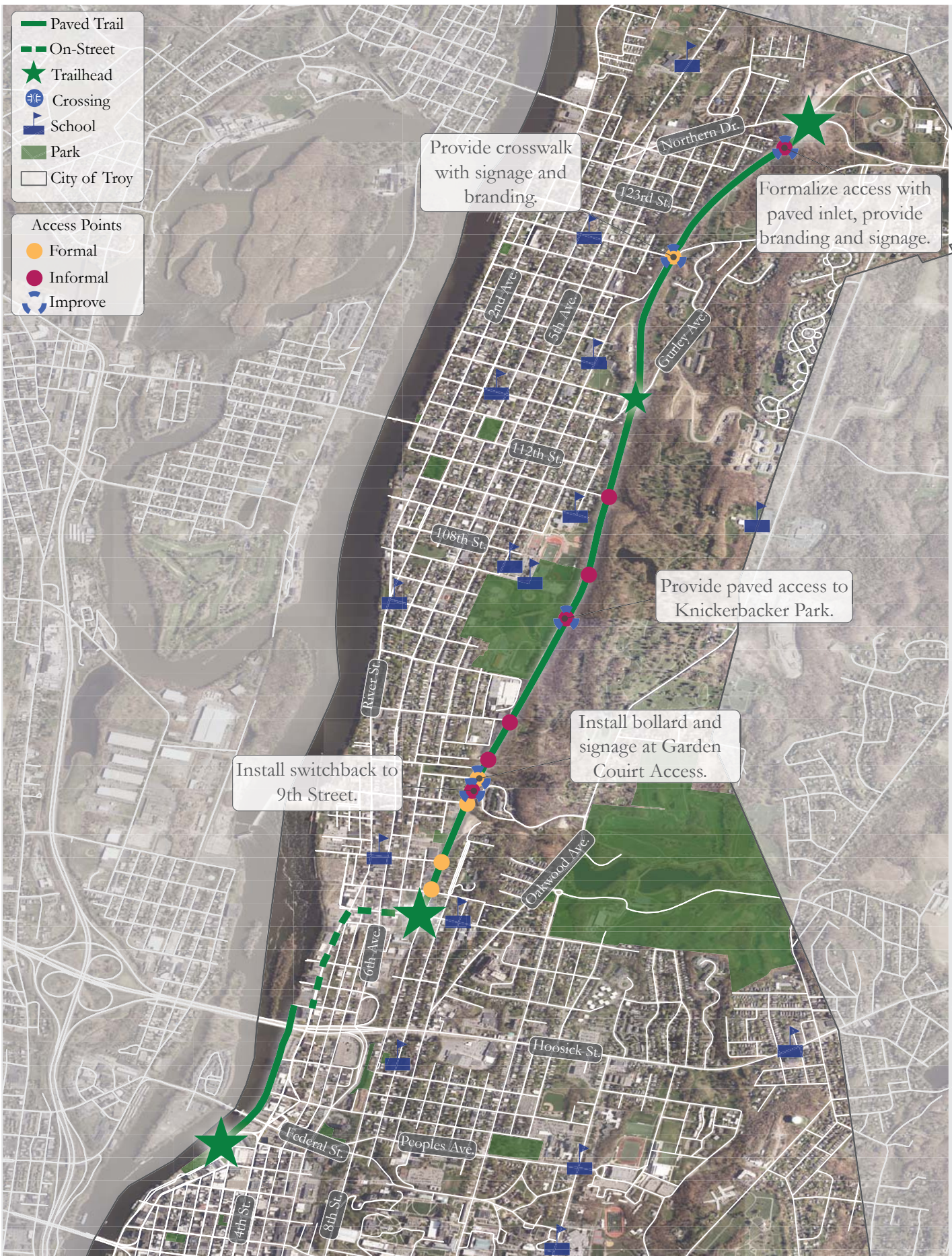
### GARDEN COURT

There is currently a formal connection between the bikeway and Garden Court, but there is no signage to let users know where they are or what trail is met. Adding wayfinding signage at this location, as well as amenities, such as benches, bike parking, and public art, will help create a more welcoming access point. A bollard is also recommended here for vehicle restriction.

### 9TH STREET

At the end of 9th Street, there is an informal connection with the bikeway. Creating a formalized switchback up to 9th Street will create a safer and more comfortable connection to the residences up the hill.









### Northern Drive Trailhead

See trailhead recommendations.



### Ives Court

Develop formal connection.



### Cemetery Road

Intall crossing and signage.



### Northern Drive Trailhead

See trailhead recommendations.

### MLK Apartment Staircase

Troy housing Authority is planning on replacing the staircase.



### Northern Drive Trailhead

See trailhead recommendations.



### 9th Street

Install switchback.



### Northern Drive Trailhead

See trailhead recommendations.

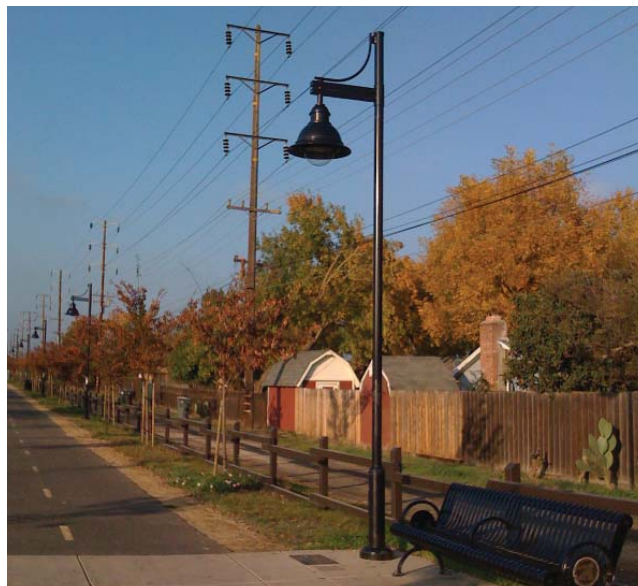
## COMFORT & SAFETY RECOMMENDATIONS

### LIGHTING

Officially, the Uncle Sam Bikeway is closed from dusk til dawn. However, with the tree canopy and other obstacles that block the sunlight, the trail can become dark long before the sun sets. This creates a demand for trail lighting. While lighting the entire trail can be an expensive venture and is expanded upon under Long Term development (see Page 2-16), there are certain key locations where low-cost solar lighting fixtures can be installed along the trail. These include:

- At the opening of each trailhead to help designate the facility of as a trail and help motorists see trail users.
- At each trail crossing to increase the visibility of trail users.
- Within the 101st Street Underpass to increase comfort.
- Within each bollard installed in order to increase the visibility of the bollards during twilight and in wet conditions.

With the exception of the bollard and underpass lights, each lighting fixture should be at a pedestrian scale (16' - 18' tall). They should be placed no less than 3' and no more than 5' from the trail's edge. Utilizing solar lighting fixtures is recommended to avoid trenching and installation of utility lines.



Example Decorative Trail Lighting  
at a Pedestrian Scale

### MOTOR VEHICLE RESTRICTION TOOL-BOX

Motor vehicle use of the Uncle Sam Bikeway is a noted problem for the trail that is restricted to only non-motorized travel. This problem arises in large part due to the wide entryways into the trail corridor that can be mistaken for local streets, low visibility of the trail (resulting in low accountability for those who knowingly and wrongfully use the trail as a cut through) and a lack of branding of the trail. While other recommendations within this action plan, such as installing wayfinding, can help reduce motor vehicle use, the tools and techniques to the right can also be effective at repelling motorists from the bikeway:



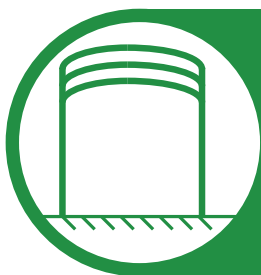
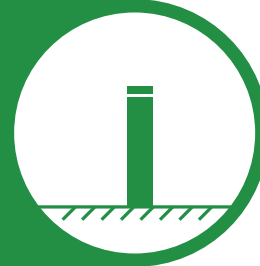


## SIGNAGE

Low cost option, but generally has low compliance and not aesthetically pleasing. SEE MUTCD r5-3

## BOLLARD

Highly effective tool for restricting motor vehicle access, but runs the risk of being a hazard for trail users.

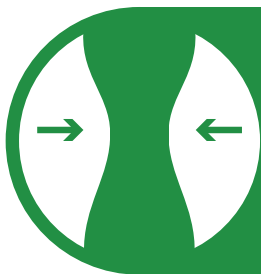


## GATEWAY ARCH

Decorative treatment which visually shrinks the trail entrance and clearly denotes the beginning of the trail.

## SEPERATED LANES

Seperating the trail lanes by user type or direction with a median narrows the travel space for motorists.



## PINCH POINT

Pinch points installed at trail entrances can help repel motor vehicle use.

## WAYFINDING RECOMMENDATIONS

Wayfinding refers to a specific type of signage that is used to direct users and help users identify where they are and what facility they are using. This generally comes in the form of maps, directional pointers, mile markers, location designations, and information kiosks. In the trail realm, wayfinding is a highly crucial aspect of any trail facility. Wayfinding helps individuals identify where trails can be accessed, where they are when using the trail, and what they can access from the trail. Having this information available to trail users greatly increases their comfort and increases the awareness of the trail facility.

Currently, the Uncle Sam Bikeway has a single piece of wayfinding signage, which is located at the downtown/waterfront trailhead and offers trail users guidance around the downtown area and a path to reach the paved, separated section of the bikeway, but does not show the remainder of the bikeway. The wayfinding map can be seen on the map on the following page.

There currently is not any wayfinding at any other trailheads, any access point, or along the trail itself. This leaves many users confused about where they are while on the trail, results in motor vehicles driving on the trail as they do not realize it is a trail facility, and leave users uncomfortable continuing on the trail for further

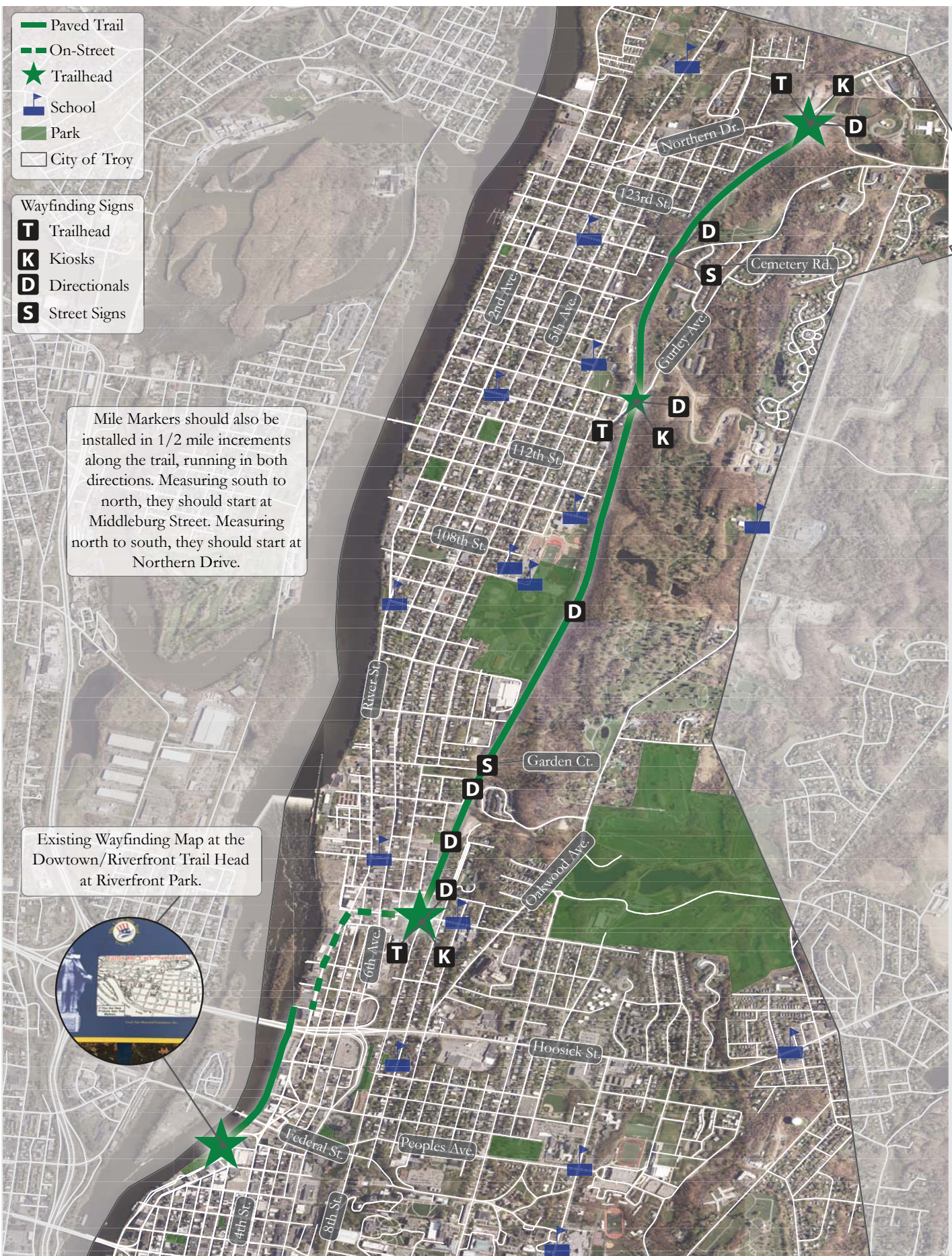
distances as they do not know where the next outlet will be located. The lack of wayfinding has been identified by the public and the steering committee as a major issue for the facility.

As part of the action plan, two wayfinding sign concept bundles have been developed and are expanded upon on pages 2-12 and 2-13. While they have been developed as bundles, the signs are interchangeable between the bundles and can be mixed and matched together.

It should also be noted that, regardless of which set of signs is chosen, The signs should utilize either engraved or raised lettering in order to create a higher contrast for the visually impaired, and should use simplified fonts for similar purposes. Any large amounts of text, such as the paragraphs on the kiosks, should also be associated with brail translations beside it. Directional signs should also be positioned just above average eye-height for walking adults, as well as average eye-height for individuals in wheel chairs. These features will help increase access to the information on the way-finding signs for those with disabilities.

The map on the following page illustrates the recommended locations for the different kinds of wayfinding signage. Recommendations for installing standard street signs at trail crossings have also been included.







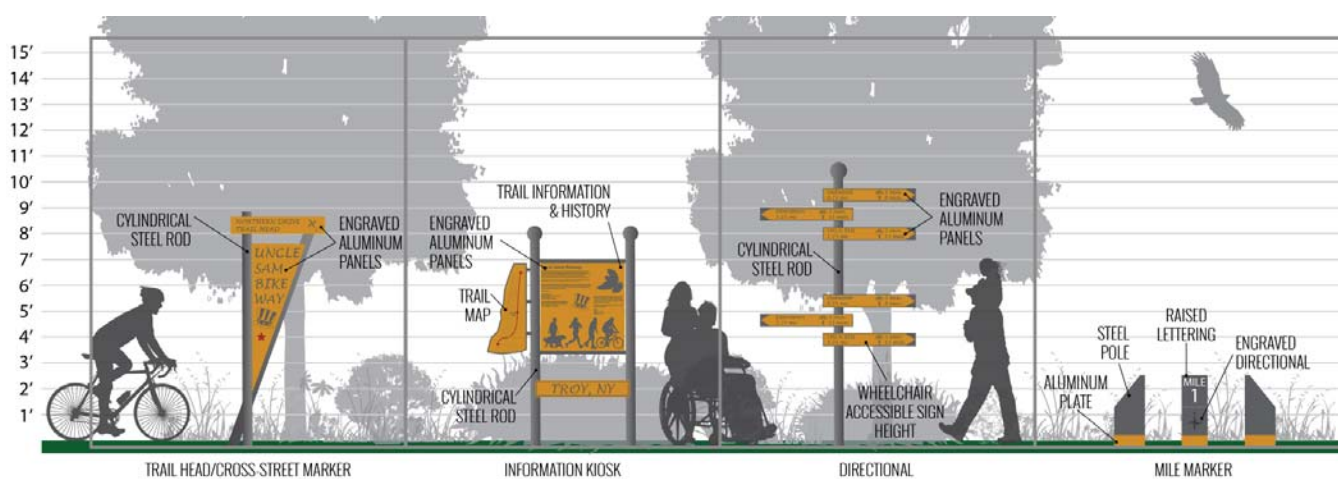
## WAYFINDING CONCEPT #1 - TRADITIONAL

The traditional wayfinding concept represents a low-cost, more recognizable set of wayfinding signs, yet still offers a unique feel that will help establish the Uncle Sam Bikeway brand.

From a production standpoint, the signs have generally easily cut pieces, relies heavily upon low-cost engraving, and has a low number of different materials. All of which is decreasing the costs of the individual signs and allows for mass production of the signs at a lower cost.

The color of the signage and upfront representation of the logos gives the wayfinding signage its uniquely identifiable brand.

A key piece to the Traditional Concept is the Information Kiosk design. This particular piece to this concept can give trail users a range of information from trail history, to local wildlife details, to trail statistics like grade changes, length, or approved uses. It also offers a simplified map of Troy, highlighting in red the trail with locations and names of cross-streets engraved into the panel. All text on the information kiosk should also be written in brail in order to provide information access for the visually impaired.



Uncle Sam Bikeway - Wayfinding Concept #1: Traditional

## WAYFINDING CONCEPT #2 - ABSTRACT

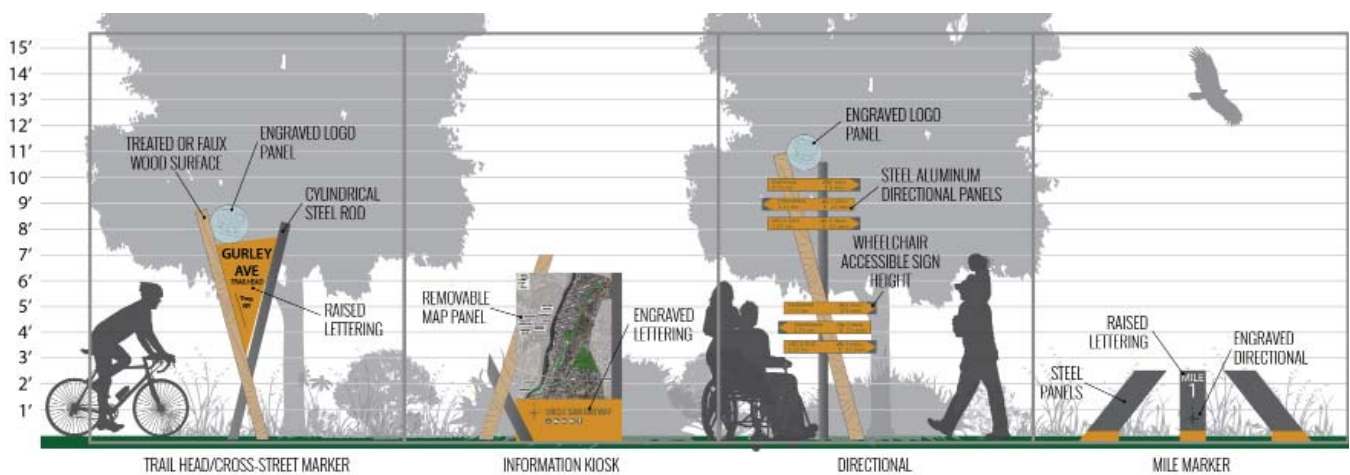
The abstract concept introduces a new layer of appeal to the wayfinding concept beyond the simplicity of the traditional concept. Incorporating new materials and a more modern design with more angles and shapes. The a-typical design has a higher chance of catching the eye of trail users and passer-bys alike, achieving one of the primary goals of any wayfinding signage.

The more modern look also creates an atmosphere of 'new-life' for the trail, identifying these sets of improvements as giving the corridor a new beginning and separating it from its current reputation.

The additional materials and abstract designs do create a higher cost for the signs and make mass production a more challenging feat though.

Key features for the Abstract Concept include:

- The introduction of the engraved logo panel. This feature, made of a clear plastic or Plexiglas for durability, emphasizes the brand of the trail. The logo itself can be one of the City of Troy, Transport Troy, or a unique trail branding. The illustrated logo is an 'Uncle Sam hat' intended to represent a possible trail logo.
- A high-detail, removable map. This allows trail users to see the City of Troy in full, emphasizing parks and key destinations that can be easily accessed along the trail. Having the map panel removable allows for it to be easily replaced as new developments in the City are completed or allows it to be replaced at a cheaper cost if it falls victim to vandalism.



Uncle Sam Bikeway ~ Wayfinding Concept #2: Abstract

## PROGRAM RECOMMENDATIONS

The City of Troy and other stakeholders should create encouragement programs to be established alongside the infrastructure improvements in order to encourage trail use. A few example program recommendations are listed below.

### BIKE TO WORK/SCHOOL/CHURCH DAYS

Encouraging commuters, students, and other travelers to utilize the trail to bike to their destination is a powerful way to encourage healthy living. As a tool to encourage such behavior, national bike to work, bike to school, and bike to church have been established nationally. The following are the annual dates for each:

- Bike to Work: Third Friday in May
- Bike to School Day: Second Wednesday of May
- Bike to Church Day: Third Sunday of August

Schools, employers, and churches should encourage its members to bike along the trail during these days, and form riding buddies during these events to continue riding in the future.

### UNCLE SAM DAY EVENTS

The City of Troy annually commemorates the birth of the bikeway's namesake through events, such as parades and festivals. Creating an Uncle Sam Day ride, giving a tour through the Uncle Sam Bikeway can introduce individuals to the trail, who would otherwise be unaware of its presence.

## TROY PRERAMBLE

The Troy PreRamble is an annual complete streets festival in the City of Troy that already offers biking tours along the trail. Continuing this annual event and further encouraging attendance is recommended to continue to grow trail use and support.



View of the 2015 Troy PreRamble  
Primary Festival Area



During Bike to Destination Events, Leaflets and  
Give Aways can be Made Available to Participants



## RPI NRB

Rensselaer Polytechnic Institute annually holds an orientation week for incoming students. As part of this orientation week, dubbed Navigating Rensselaer and Beyond, a range of community events and off-campus events are organized, such as hiking and sailing. Encouraging the institute to utilize the bikeway for an NRB bike ride can introduce the new RPI students to the City's bicycle infrastructure.

## FRIENDS OF UNCLE SAM & TRAIL CLEAN UP

A "Friends of the Uncle Sam Bikeway" Committee should be established to help organize public outreach and trail maintenance efforts. Other organizations, such as after-school clubs or community service organizations, may also organize trail clean-up events, especially around the autumn season for cleaning up the fallen leaves.

This program can be established as a public club or as an extracurricular activity at one of the schools near the trail corridor. This can also act as an inter-school program, or be a part of another organization, such as the Lansingburgh Boys & Girls Club.

The City of Troy or another stakeholder can create bikeway brochures to be made free and available to the public at key locations, such as City Hall, Capital Roots, schools, public parks, Troy Bike Rescue, or different festivals. Having these brochures can help spread awareness of the trail. The brochures should include a map of the trail that identifies access points and

connecting destinations. The brochures may also include a trail history, basic trail etiquette, bicycle and pedestrian safety laws, or other pieces of information related to the trail. These brochures can also be provided at the information kiosks installed along the trail in order to provide trail users with a portable map that they can take advantage of while on the trail.

Alternatively, digital brochures can be created on a number of different online platforms. This can include a website that is referenced on fliers and different web-pages or QR codes that are posted along the trail and throughout the City. This allows anyone with a smart phone, tablet, or computer to access the brochures and eliminates the maintenance cost of continually reprinting the brochures and replacing them.

## BIKEWAY PATROLS

It is recommended that the Troy Police Department begins a system of bikeway patrols in order to incorporate a higher level of enforcement on the trail. This should help increase the comfort of trail users, reduce illegal activity along the trail, reduce motor vehicle use of the trail, and encourage trail use overall.

The police patrols should be by bicycle. This will help discourage motor vehicle use on the trail by having the police as an example of proper trail use. It will also give the police as a proper example of helmet use, bicycling etiquette, and equipment use; such as bells and lights.

## PUBLIC ART PROJECTS

Public art, such as murals or statues, can be great for creating a welcoming environment for any trail. It is recommended that the City has local artists create works of public art that reflects the history and highlights of the trail, as well as the neighborhoods it passes through. If murals are to be used, it is recommended that they incorporate detailed eyes in some form. Studies show that areas with murals with eyes in them see a decrease in crime greater than areas with other murals.

Public art can also include the installation of one of Troy's Creative Crosswalks at a trail crossing. Creative crosswalks are crosswalks with murals within the crossing or within curb extensions around the crosswalks. Troy started a creative crosswalk program through the efforts of Transport Troy in 2015.



One of Troy's Creative Crosswalk at Adam's Street & First Street, Installed in 2015

## ADDITIONAL AMENITIES

In addition to the facilities and improvements recommended for trail access, vehicle restriction, comfort, and safety, this action plan identifies key public amenities which should be installed throughout the trail. They provide trail users with different services and comforts. They are listed below:

### FIXIT STATIONS

Fixit stations refer to designated locations where tools, such as wrenches, screwdrivers, air pumps, and others, are provided for bicyclists who may encounter unexpected maintenance needs while on the trail. They provide the tools necessary for small-scale fixes and maintenance, such as replacing tires or tightening bolts. It is recommended that these be installed at each trailhead, as well as at Knickerbacker Park.

### BENCHES

Benches are a popular amenity among most open space facilities, such as trails. Providing benches along the trail will give trail users the ability to take a break and rest. Benches must be placed out of the direct path of the bikeway, and each bench shall be accompanied by a concrete or asphalt pad that will serve as a rest area for those in wheelchairs or using strollers. They are recommended to be installed at each trailhead and at the waterfalls, on either side of the trail's bridge. A bench is also recommended for installation 200' south of the Cemetery Road Access Point.



Example of a Fixit Station with a Rack, Air Pump, and Assorted Tools



## BICYCLE PARKING

Bicycle parking provides trail users the option to leave and lock their bikes at a designated point. This allows for trail users, who wish to use the trail for recreational running and jogging, to first bike to the trail. It also allows bicyclists to take breaks during their travel to enjoy the natural landscape, rest, or voyage off of the trail and into the neighborhoods of Troy to visit local businesses or residences. Bicycle parking should be installed at each trail head throughout the bikeway, and any locations where benches are installed. These can also be themed or branded to match the other trail amenities. All bike parking should meet the recommended guidance of the Association of Pedestrian and Bicycle Professionals' Essentials of Bike Parking.

## TRASH RECEPTACLES

Providing trash receptacles along a trail can help discourage trail users from littering, which results in a cleaner trail that more individuals are likely to use. Trash receptacles are recommended to be placed at each trailhead and be emptied on a regular basis. They are also recommended at the trail bridge near the waterfalls, to discourage trail users from throwing trash into the creek.

## LONG TERM DEVELOPMENT

Long-term development references trail development efforts that, if pursued, would likely be taken into effect 10 or more years out. The long term development recommendations outlined below focus on trail network connections; where



Themed Bike Parking Located at Capital Roots in Troy

development of other trails must first take place, and large infrastructure projects; where the installation of aspects such as utilities could be tied into future capital projects to diminish the costs.

## 24/7 TRAIL HOURS

One desire established by the steering committee and public was opening up the trail to be available 24 hours a day. This will require several steps to be completed before it is considered a feasible option:

### Lighting Fixtures

Lighting fixtures should be installed along the entirety of the trail at approximately 75' - 100' intervals. Due to the tree canopy, solar lighting is likely infeasible. This will then require the installation of an electrical utility line along the trail. In order to avoid light encroachment from the trail fixtures into nearby residences, automatic dimming should also be considered. An actuation system should be installed with the lights, causing them to brighten when a trail user is detected and dim when the trail is unoccupied.

### Trail Enforcement

Bikeway patrols should be started and well established prior to the opening of the trail on a 24 hour per day basis. 24 hour operation of the trail may result in an uncomfortable and negative view of the trail by residents who live abutted to the trail. Having police patrols of the trail can help reduce this outlook on the trail and create higher community support.

## MLK APARTMENTS CONNECTION

Troy Housing Authority's Martin Luther King (MLK) Apartments has a stairwell and ramp that leads from the apartments to the Uncle Sam Bikeway but this access point has fallen into disrepair. Plans to reconstruct this point of

access with a new stairwell and ADA compliant ramp have been discussed, but do not yet have a development schedule. It is recommended that this improvement is followed through with as it will provide access to the trail for the residents of the public housing development which is often criticized as being out of the way and difficult to access. On-Street Section Development

The section of the Uncle Sam Trail that has not been addressed within this action plan is the on-street section from the Middleburgh trailhead to the downtown/riverfront trailhead. It is recommended that this section of the trail eventually receives its own action plan in order to provide a more comfortable connection between the separated and paved Uncle Sam Bikeway addressed and the growing downtown area of Troy. This will also provide a connection for the soon-to-be developed waterfront trail in downtown Troy.

## TRAIL RESURFACING

Throughout the trail corridor, many areas of the bikeway have fallen into disrepair. Cracks have formed in the pavement, potholes can be found, and upheaval is apparent in certain areas. This deformities in the trail can result in tripping hazards along the trail, and if left, can prevent use of the trail for bicyclists or those with limited mobility.

It is recommended that the trail surface be assessed, and areas for priority patchwork of the trail are identified. In the short term, these areas should have cracks and holes filled. However, the City should create a long term plan to completely replace the trail's surface within the next 5-7 years.

## PRIORITY RECOMMENDATION ACTION PLAN

The table below represents the prioritization of this action plan's recommendations. The prioritization process was based upon:

- Immediate need
- Long term need
- Short term costs (design & installation costs)
- Long term costs (maintenance & replacement

costs)

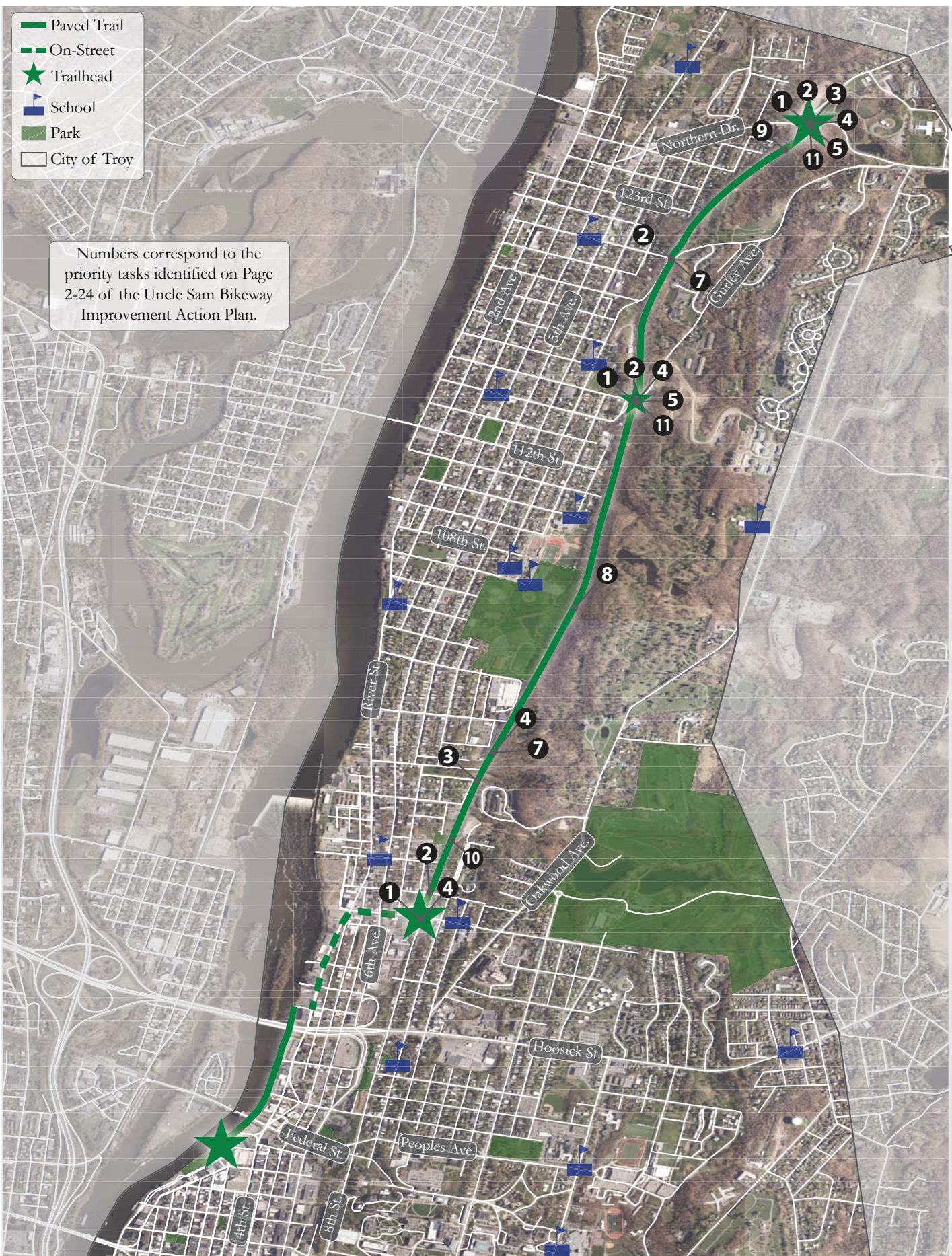
- Community Support
- Available Resources

The map on the following page identifies the locations of each priority development.

## COST SUMMARY

<i>Priority</i>	<i>Task</i>	<i>Description</i>	<i>Cost Range</i>
1	Trailhead Signage	Wayfinding signage, crossing signage, etc.	\$
2	Trail Crossings	Crosswalks and signage at trail crossings	\$
3	Vehicle Restrictions	Install vehicle restriction methods	\$\$
4	Trail Amenities	Bike racks, benches, fix-it stations, lighting, etc.	\$\$
5	Trailhead Access	Bike lanes, shared lane markings, sidewalks, etc.	\$\$\$
6	Bike to Events	Organize City wide bike to work/ school/ church events	\$
7	Additional Wayfinding	Mile markers and other signs throughout the trail	\$\$
8	Knickerbacker Park Access	Install access path to the park and provide signage	\$\$\$
9	Ives Court Access	Create paved access to trail from Ives Court	\$\$
10	9th Street Switchback	Install switchback from the trail to 9th Street	\$\$\$
11	Trailhead Parking Striping	Repave and stripe the parking areas at the trailheads	\$\$\$
12	Trail Resurfacing	Resurfacing the trail's pavement throughout	\$\$\$
13	Bikeway Police Patrols	Create a trailway patrol program with Troy PD	\$
14	Public Art Projects	Have local artists install murals and other artworks	\$\$







The cost summary below represents the costs of implementing both long term and short term improvements outlined in this action plan. The costs also do not account for the inclusion of resources that the City or stakeholders may already have, such as striping paint or crosswalk tape.

There are many sources for funding, including public and private sources, that can be used in

order to implement the recommendations outlined in this action plan, as well as resources that the City or the stakeholders may already possess that can offset the costs of installations.

Item	Description	Type	Unit	Unit Cost	Amount	Total Cost
1	Bicycle Symbol	Marking	EACH	\$ 180.00	12	\$ 2,160
2	Shared Lane Symbol	Marking	EACH	\$ 180.00	20	\$ 3,600
3	Painted Letters	Marking	EACH	\$ 50.00	20	\$ 1,000
4	Handicap Parking Symbol	Marking	EACH	\$ 250.00	2	\$ 500
5	Diamond Marking (Bollards)	Marking	EACH	\$ 25.00	1	\$ 25
6	Crosswalk Marking	Marking	LF	\$ 8.00	5	\$ 40
7	Park Bench	Amenity	EACH	\$ 1,500.00	5	\$ 7,500
8	Bicycle Parking (Capacity:2)	Amenity	EACH	\$ 75.00	5	\$ 375
9	Trash Recepticle (Trash/Recycling Separated)	Amenity	EACH	\$ 150.00	5	\$ 750
10	Fixit Station	Amenity	EACH	\$ 300.00	4	\$ 1,200
11	Trail Gateway	Amenity	EACH	\$ 350.00	1	\$ 350
12	Trail Lighting (Solar)	Amenity	EACH	\$ 3,500.00	9	\$ 31,500
13	Bollard (with Lighting)	Amenity	EACH	\$ 650.00	1	\$ 650
14	Pedestrian Detectable Warning Panel	Amenity	EACH	\$ 45.00	3	\$ 135
15	Wayfinding: Trailhead	Signage	EACH	\$ 8,000.00	3	\$ 24,000
16	Wayfinding: Kiosk	Signage	EACH	\$ 5,000.00	3	\$ 15,000
17	Wayfinding: Directional	Signage	EACH	\$ 1,500.00	7	\$ 10,500
18	Wayfinding: Mile Marker	Signage	EACH	\$ 300.00	14	\$ 4,200
19	Vehicle Restriction Sign	Signage	EACH	\$ 300.00	2	\$ 600
20	Trail Crossing Assembly	Signage	EACH	\$ 900.00	6	\$ 5,400
21	Street Sign	Signage	EACH	\$ 200.00	2	\$ 400
22	HMA Access Path	Pavement	LF	\$ 100.00	1200	\$ 120,000
23	Trailway Resurfacing	Pavement	LF	\$ 35.00	18480	\$ 646,800
24	5' Wide PCC Sidewalk installation	Pavement	LF	\$ 80.00	250	\$ 20,000
25	8' HMA Sidepath Installation	Pavement	LF	\$ 100.00	475	\$ 47,500
26	PCC Rest Pad	Pavement	EACH	\$ 1,600.00	5	\$ 8,000
27	PCC Sidewalk/Trail Ramp w/ Curb Cut	Pavement	EACH	\$ 850.00	2	\$ 1,700
28	4" White Stripe	Striping	LF	\$ 0.23	1400	\$ 322
29	6" White Stripe	Striping	LF	\$ 0.47	1600	\$ 752
30	4" Hatch Striping	Striping	LF	\$ 0.79	85	\$ 68
31	Double Yellow Centerline Striping	Striping	LF	\$ 0.54	2000	\$ 1,080
32	Switchback Installation	Other	LS	\$ 50,000.00	1	\$ 50,000
33	Grading & Earthwork (5%)	Other	LS	\$ 50,305.35	1	\$ 50,310
Total						\$ 1,057,000

Cost estimate source: NYSDOT Pay item Catalogue & Previous Projects